

GHG Reduction Strategies for Connecticut



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Take-Away Message

- NESCAUM is supporting CT DEP through a process to focus, prioritize, and assess the many good candidate measures that have been identified to date.
- Several key measures will be analyzed through an integrated assessment framework
- Others will be quantified using existing data and analyses
- A list of recommended measures to be published for public comment in late spring

Need for Focus

- Initial list of measures has been developed through CT Climate Action Plan, stakeholder dialogue and review of NJ, NY, CA plans.
- Very broad list including about 150 measures spanning all sectors
- “measures” included wide range of potential actions from creating voluntary registries and public education campaigns to incentives and actual regulations

Process for developing a focused list

- Identify key strategies with significant reduction potential that lend themselves to quantification.
- Review what's left; ensure comprehensiveness
- Review what's there; reduce duplication

Transportation

- CA LEV II with LDV GHG Standard (Pavley)
 - 27% reduction in fleetwide GHG emissions by 2016
- CA LEV III (proposed continuation of Pavley)
 - Additional reductions through 2022
- LDV Feebate Program
- Low Carbon Fuels Standard
 - 10% reduction in GHG intensity for Transportation Fuels
 - CT implementation of Renewable Fuels Standard 2
 - Governor's Task Force on Electric Vehicle Recommend.

Transportation (2)

- Smart Growth Strategies
 - Review of program components and potential for CT
- VMT Reduction
 - Double public transit ridership
- Speed Limits
- Clean Diesel Program
 - Review strategies to remove short-lived climate forcers and express in CO2 equivalent terms

Residential, Commercial, Industrial

- Appliance Standards
 - All new appliances sold in CT
- Residential and Commercial Building Codes
 - Upgrade requirements for insulation, appliance efficiency, HVAC
- Fiscal Incentives for Energy Efficiency
 - EE mortgages, ESCO programs, loans, etc.
- EE Technical Potential Study
 - Assess implementation of “top 20” opportunities for residential, commercial, and industrial sector

Residential, Commercial, Industrial (2)

- Natural Gas Conservation
 - Consider the benefits of funding a conservation fund
- Oil Conservation
 - Consider the benefits of funding a conservation fund
- Heat Pumps
 - Examine technical potential for RES heating and water heating.
- Weatherization
 - Focused on retrofit possibility for CT

Residential, Commercial, Industrial (3)

- Load Management/Load Shifting
 - NEDRI recommendations, Load Management Fund
- High GWP gas measures
 - Mostly focused on refrigerant recycling program
- Combined Heat and Power
 - Is there more potential in CT?

Electric Power Sector

- Renewable Portfolio Standard
- RGGI / RGGI 2 / RGGI +
 - Look at extensions and expansions of the GHG cap
- Smart grid technologies and other utility infrastructure
- Base Load Performance Standard
 - Set a environmental standard equivalent to IGCC

Waste/Forest/Agriculture

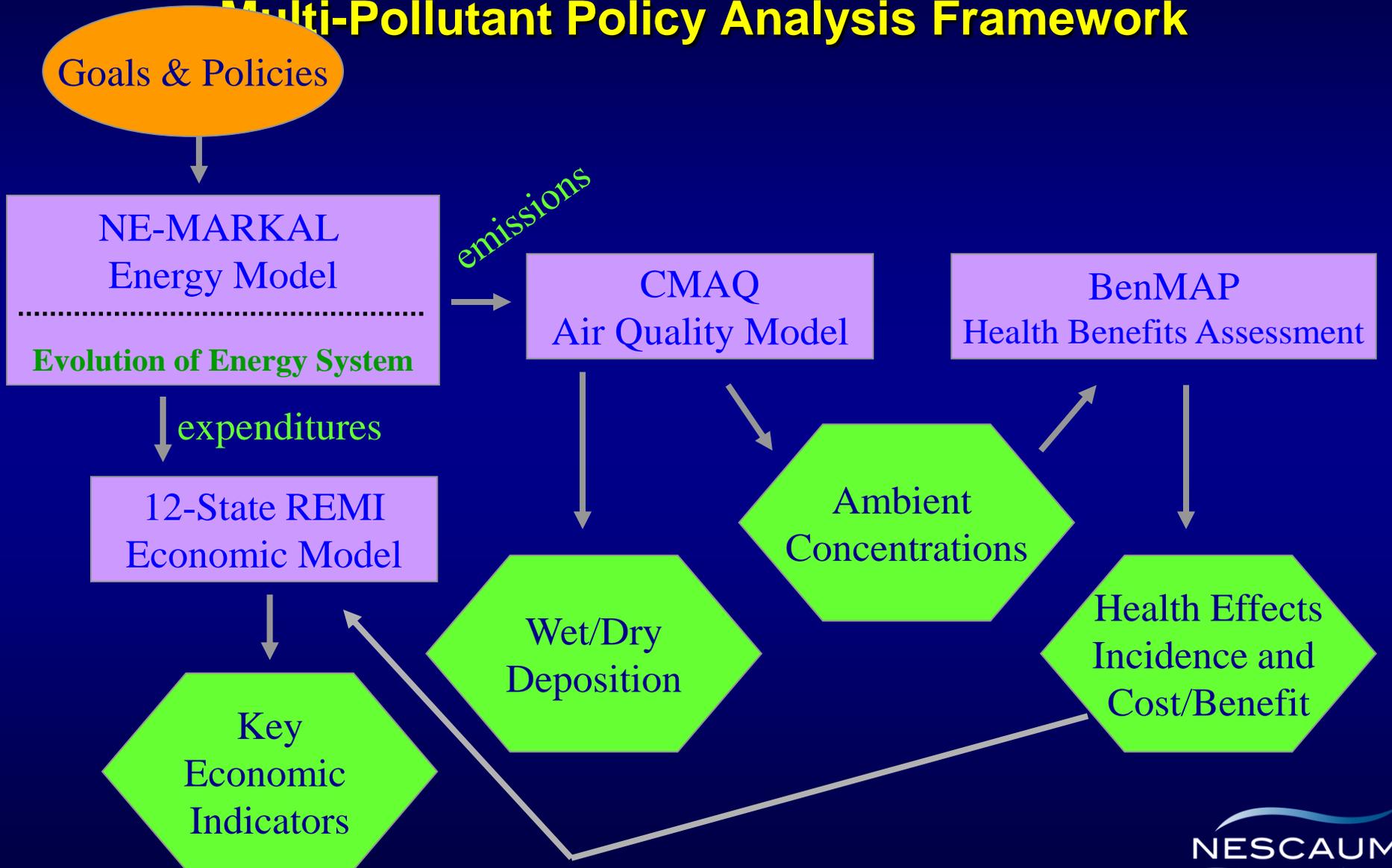
- CT Solid Waste Management Plan
- Forest and Ag Land Preservation Measures
 - Look at opportunities to preserve forest and ag land from development

Analysis Approach

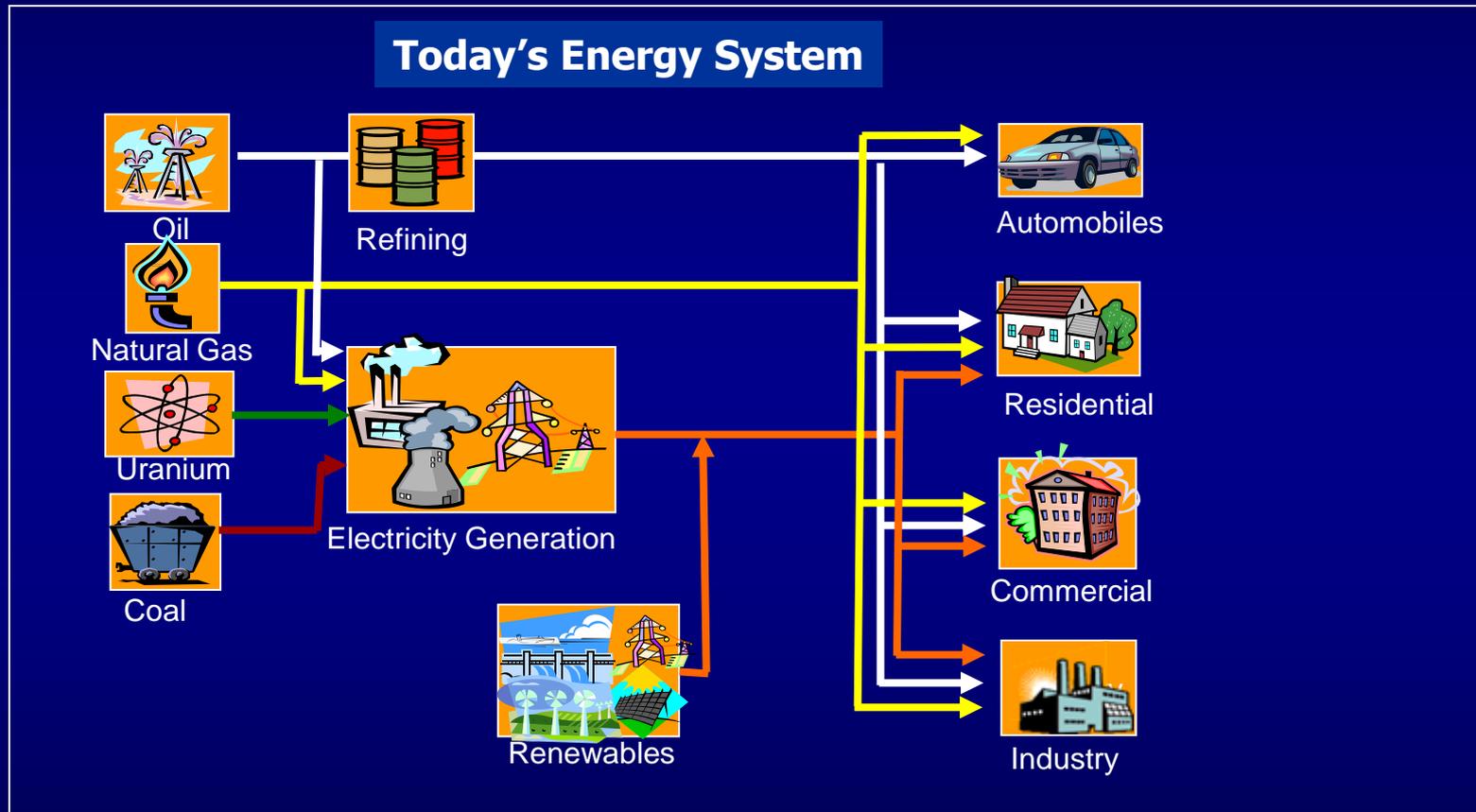
- Two-fold approach:
 - NE-MARKAL: Energy system modeling component of NESCAUM's regional integrated assessment framework
 - Other Approaches: Review of CCS Climate Action Plan, New York/NYSERDA Climate Action Plan, California Air Resources Board, New Jersey Climate Action Plan and other recent studies that examine similar measures

NESCAUM's Multi-Pollutant Policy Analysis Framework (MPAF)

NESCAUM's Multi-Pollutant Policy Analysis Framework

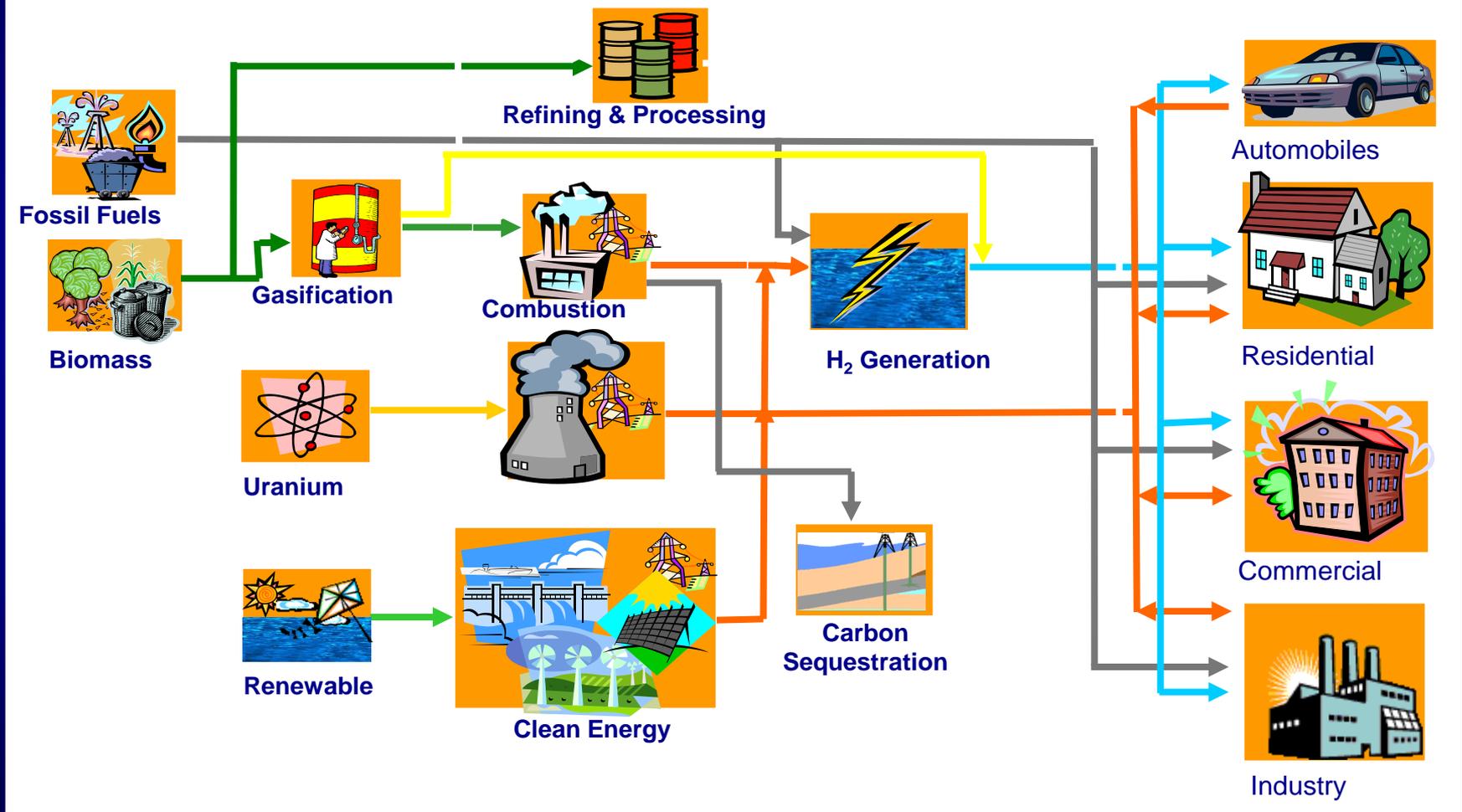


NE-MARKAL: Energy Model as Centerpiece



Source: EPA ORD

NE-MARKAL: Energy Model as Centerpiece



Transportation Demands

- Light Duty Vehicles
 - Small Car
 - Large Car
 - Minivan
 - Small Truck
 - Large Truck
- Heavy Duty Vehicles
 - Bus
 - Truck

These classes are split by fuels and vintages

Other TRN demands (i.e. rail, aviation, marine) consume fuel, without detailed characterization

Residential/Commercial Demands

- RES Energy Service Demands

- Space Heating
- Appliances
- Water Heating
- Space Cooling
- Lighting
- Refrigeration
- Secondary Heat
- Clothes Dryer
- + 6 others

- COM Energy Service Demands

- Space Heating
- Lighting
- Space Cooling
- Water Heating
- Office Equipment
- Refrigeration
- Cooking
- Ventilation

Industrial Demands

- Industrial Sectors
 - Chemicals
 - Metals
 - Durable Goods
 - Paper
 - Glass & Cement
 - Other
- Sub-sector Demands
 - Boilers
 - Process Heat
 - CHP
 - Machine Drive
 - Petro-chemical process
 - Other processes

THANK YOU!

For Questions:

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